I claim:

1. A method for preventing fouling of equipment handling one or more fouling agents comprising treating a blend comprising said one or more fouling agents with an N,N-disubstituted amide in an amount and under conditions effective to form a dispersion of said one or more fouling agents in said blend and to prevent said one or more fouling agents from depositing on said equipment under conditions of operation of said equipment.

2. The method of claim 1 wherein said N,N-disubstituted amide is an amide of a fatty acid.

3. The method of claim 1 wherein said fatty acid has about 16 to about 22 carbon atoms.

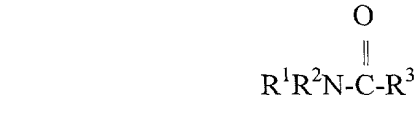
4. The method of claim 1 wherein said N,N-disubstituted amide is an N,N-dialkyl amide comprising alkyl groups having from about 1 to about 6 carbon atoms.

5. The method of claim 2 wherein said N,N-disubstituted amide is an N,N-dialkyl amide comprising alkyl groups having from about 1 to about 6 carbon atoms.

6. The method of claim 3 wherein said N,N-disubstituted amide is an N,N-dialkyl amide comprising alkyl groups having from about 1 to about 6 carbon atoms.

7. A method for preventing fouling of equipment handling one or more fouling agents comprising treating a blend comprising said one or more fouling agents with an N,N-disubstituted amide in an amount and under conditions effective to form a dispersion of said one or more fouling agents in said blend and to prevent said one

or more fouling agents from depositing on said equipment under conditions of operation of said equipment, wherein said N,N-disubstituted amide has the following general formula:



wherein:

R^1 and R^2 independently are selected from the group consisting of hydrogen atoms; hydroxyalkyl groups having from about 1 to about 3 carbon atoms; aryl groups; aralkyl groups; alkaryl groups; branched or unbranched alkyl groups (and alkenyl groups) having from about 1 to about 30 carbon atoms, preferably from about 1 to 6 carbon atoms, most preferably from about 1 to 4 carbon atoms; cyclic groups having a total number of from about 4 to about 6 carbon atoms; and, cyclic groups wherein R^1 and R^2 are connected either directly or via a heteroatom to form a cyclic group having a total number of members of from about 5 to about 7, wherein said heteroatom is selected from the group consisting of nitrogen, oxygen, and sulfur; and,

R^3 is selected from the group consisting of hydrogen, aryl groups, alkaryl groups, aralkyl groups, and branched or unbranched alkyl and alkenyl groups having from about 1 to 30 carbon atoms.

8. The method of claim 7:

provided that,

when R^1 and R^2 are connected to form a cyclic amide, and said cyclic amide comprises a nitrogen heteroatom, R^1 and R^2 each contain 2 carbon

atoms and said nitrogen heteroatom comprises a substituent selected from the group consisting of hydrogen, a hydroxyalkyl group having from about 1 to about 3 carbon atoms , and an alkyl group having from about 1 to about 6 carbon atoms; and,

provided that when R^1 is selected from the group consisting of a hydrogen atom and alkenyl group, R^2 is

$$C_nH_{2n-z}$$

wherein, when n is an even number, R^1 or R^2 comprises a quantity of carbon-carbon double bonds and said quantity increases from 1 to 2 to 3, to 4 to a maximum of n/2, with z following a first progression 1, 3, 5, 7,.... to n - 1, depending of the number of alkene groups present; and

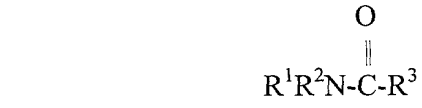
when n is an odd number and said quantity increases from 1 to 2 to 3, to 4 to a maximum of (n-1)/2, with z following a second progression, 1, 3, 5, 7,.... to n-2.

9. The method of claim 7 wherein R^3 is selected from the group consisting of branched and unbranched alkyl and alkenyl groups having from about 16 to 22 carbon atoms.

10. The method of claim 8 wherein R^3 is selected from the group consisting of branched and unbranched alkyl and alkenyl groups having from about 16 to 22 carbon atoms.

11. A method for preventing fouling of equipment handling one or more fouling agents comprising treating a blend comprising said one or more fouling agents with an N,N-disubstituted amide in an amount and under conditions effective to form

a dispersion of said one or more fouling agents in said blend and to prevent said one or more fouling agents from depositing on said equipment under conditions of operation of said equipment, wherein said N,N-disubstituted amide has the following general formula:



wherein:

R^1 and R^2 independently are selected from the group consisting of hydrogen atoms; hydroxyalkyl groups having from about 1 to about 3 carbon atoms; branched or unbranched alkyl groups and alkenyl groups having from about 1 to about 30 carbon atoms; and,

R^3 is selected from the group consisting of hydrogen, aryl groups, aralkyl groups, alkaryl groups, and branched or unbranched alkyl groups and alkenyl groups having from about 1 to 30 carbon atoms.

12. The method of claim 11 provided that

when R^1 is selected from the group consisting of a hydrogen atom and alkenyl group, R^2 is

$$C_nH_{2n-z}$$

wherein, when n is an even number, R^1 or R^2 comprises a quantity of carbon-carbon double bonds and said quantity increases from 1 to 2 to 3, to 4 to a maximum of n/2, with z following a first progression 1, 3, 5, 7,.... to n - 1, depending of the number of alkene groups present; and

when n is an odd number and said quantity increases from 1 to 2 to 3, to 4 to a maximum of (n-1)/2, with z following a second progression, 1, 3, 5, 7,.... to n-2.

13. The method of claim 11 wherein R^3 is selected from the group consisting of branched and unbranched alkyl and alkenyl groups having from about 16 to 22 carbon atoms.

14. The method of claim 12 wherein R^3 is selected from the group consisting of branched and unbranched alkyl and alkenyl groups having from about 16 to 22 carbon atoms.

15. A method for preventing fouling of equipment during solvent recovery in a diene plant comprising treating a solvent recovery blend comprising said one or more fouling agents with an N,N-disubstituted amide in an amount and under conditions effective to form a dispersion of said one or more fouling agents in said solvent recovery blend and to prevent said one or more fouling agents from depositing on said equipment under conditions of operation of said equipment.

16. The method of claim 15 wherein said diene plant produces a compound selected from the group consisting of 1,3-butadiene and isoprene.

17. The method of claim 15 further comprising separating said solvent from said dispersion.

18. The method of claim 16 further comprising separating said solvent from said dispersion.

19. The method of claim 15 wherein said N,N-disubstituted amide is an N,N-dialkyl amide comprising alkyl groups having from about 16 to about 22 carbon atoms.

20. The method of claim 16 wherein said N,N-disubstituted amide is an N,N-dialkyl amide comprising alkyl groups having from about 16 to about 22 carbon atoms.

21. The method of claim 17 wherein said N,N-disubstituted amide is an N,N-dialkyl amide comprising alkyl groups having from about 16 to about 22 carbon atoms.

22. The method of claim 18 wherein said N,N-disubstituted amide is an N,N-dialkyl amide comprising alkyl groups having from about 16 to about 22 carbon atoms.

23. The method of claim 15 wherein said fatty acid is a tall oil fatty acid

24. The method of claim 16 wherein said N,N-disubstituted amide is an amide of a fatty acid.

25. The method of claim 17 wherein said N,N-disubstituted amide is an amide of a fatty acid.

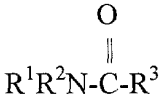
26. The method of claim 18 wherein said N,N-disubstituted amide is an amide of a fatty acid.

27. The method of claim 19 wherein said N,N-disubstituted amide is an amide of a fatty acid.

28. The method of claim 20 wherein said N,N-disubstituted amide is an amide of a fatty acid.

29. A method for preventing fouling of equipment during solvent recovery in a diene plant comprising treating a solvent recovery blend comprising said one or more fouling agents with an N,N-disubstituted amide in an amount and under conditions effective to form a dispersion of said one or more fouling agents in said

blend and to prevent said one or more fouling agents from depositing on said equipment under conditions of operation of said equipment, wherein said N,N-disubstituted amide has the following general formula:



wherein:

R^1 and R^2 independently are selected from the group consisting of hydrogen atoms; hydroxyalkyl groups wherein having from about 1 to about 3 carbon atoms; aryl groups, aralkyl groups, alkaryl groups, branched or unbranched alkyl groups and alkenyl groups having from about 1 to about 30 carbon atoms; cyclic groups having a total number of from about 4 to about 6 carbon atoms; and, cyclic groups wherein R^1 and R^2 are connected either directly or via a heteroatom to form a cyclic group having a total number of members of from about 5 to about 7, wherein said heteroatom is selected from the group consisting of nitrogen, oxygen, and sulfur;

R^3 is selected from the group consisting of hydrogen, aryl groups, alkaryl groups, aralkyl groups, and branched or unbranched alkyl and alkenyl groups having from about 1 to 30 carbon atoms.

30. The method of claim 29:

provided that,

when R^1 and R^2 are connected to form a cyclic amide, and said cyclic amide comprises a nitrogen heteroatom, R^1 and R^2 each contain 2 carbon atoms and said nitrogen heteroatom comprises a substituent selected

from the group consisting of hydrogen, a hydroxyalkyl group having from about 1 to about 3 carbon atoms, and an alkyl group having from about 1 to about 6 carbon atoms; and,

provided that when R^1 is selected from the group consisting of a hydrogen atom and alkenyl group, R^2 is

$$C_nH_{2n-z}$$

wherein, when n is an even number, R^1 or R^2 comprises a quantity of carbon-carbon double bonds and said quantity increases from 1 to 2 to 3, to 4 to a maximum of n/2, with z following a first progression 1, 3, 5, 7,.... to n - 1, depending of the number of alkene groups present; and

when n is an odd number and said quantity increases from 1 to 2 to 3, to 4 to a maximum of (n-1)/2, with z following a second progression, 1, 3, 5, 7,.... to n-2.

31. The method of claim 29 wherein R^3 is selected from the group consisting of branched and unbranched alkyl and alkenyl groups having from about 16 to 22 carbon atoms.

32. The method of claim 30 wherein R^3 is selected from the group consisting of branched and unbranched alkyl and alkenyl groups having from about 16 to 22 carbon atoms.

33. A method for preventing fouling of equipment during solvent recovery in a diene plant comprising treating a solvent recovery blend comprising said one or more fouling agents with an N,N-disubstituted amide in an amount and under conditions effective to form a dispersion of said one or more fouling agents in said

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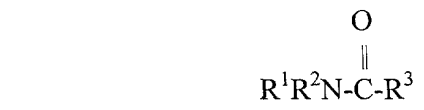
blend and to prevent said one or more fouling agents from depositing on said equipment under conditions of operation of said equipment, wherein said N,N-disubstituted amide has the following general formula:



wherein:

R^1 and R^2 preferably are selected from the group consisting of hydrogen, methyl, ethyl, propyl, iso-propyl and butyl groups; and,

R^3 is selected from the group consisting of alkyl groups, alkenyl groups, and combinations thereof having from about 16 to about 22 carbon atoms.

34. A method for preventing fouling of equipment during solvent recovery in a diene plant comprising treating a solvent recovery blend comprising a solvent and said one or more fouling agents with N,N-dimethyl amide of a fatty acid in an amount and under conditions effective to form a dispersion of said one or more fouling agents in said blend and to prevent said one or more fouling agents from depositing on said equipment under conditions of operation of said equipment.

35. The method of claim 34 further comprising separating said solvent from said blend.

36. The method of claim 35 wherein said solvent is an extractive distillation solvent.

37. The method of claim 36 wherein said solvent comprises acetonitrile.

38. A method for preventing fouling of equipment during solvent recovery in a diene plant comprising treating a solvent recovery blend comprising a solvent and

said one or more fouling agents with N,N-dialkyl amide of a fatty acid in an amount of about 20 ppm or more.

39. The method of claim 38 wherein said amount is about 50 ppm or more.

40. The method of claim 38 further comprising separating said solvent from said blend.

41. A method for preventing fouling of equipment during solvent recovery in a diene plant comprising treating a solvent recovery blend comprising a solvent and said one or more fouling agents with an N,N-dialkyl amide of a tall oil fatty acid in an amount of about 20 ppm or more.

42. The method of claim 41 wherein said amount is about 50 ppm or more.

43. A method for preventing fouling of equipment during solvent recovery in a diene plant comprising treating a solvent recovery blend comprising a solvent and said one or more fouling agents with an N,N-dimethyl amide of a fatty acid in an amount of about 20 ppm or more.

44. The method of claim 43 wherein said amount is about 50 ppm or more.

45. The method of claim 43 wherein said fatty acid is a tall oil fatty acid.

46. The method of claim 44 wherein said fatty acid is a tall oil fatty acid.

47. A stream comprising at least one fouling agent, at least one extractive distillation solvent, and an N,N-disubstituted amide in an amount effective to form a dispersion of said at least one fouling agent in said stream.

48. The stream of claim 47 wherein said N,N-disubstituted amide is an N,N-dialkylamide.

49. The stream of claim 47 wherein said N,N-disubstituted amide has the following general formula:

wherein:

R^1 and R^2 preferably are selected from the group consisting of hydrogen, methyl, ethyl, propyl, iso-propyl and butyl groups; and,

R^3 is selected from the group consisting of alkyl groups, alkenyl groups, and combinations thereof having from about 16 to about 22 carbon atoms.

50. The stream of claim 47 wherein said N,N-disubstituted amide is an N,N- dimethylamide of a fatty acid.

51. The stream of claim 47 wherein said fatty acid is a tall oil fatty acid.

52. The stream of claim 47 wherein said fatty acid is a tall oil fatty acid.

53. The stream of claim 49 wherein said fatty acid is a tall oil fatty acid.

54. The stream of claim 49 wherein said fatty acid is a tall oil fatty acid.

55. A stream comprising at least one fouling agent, at least one extractive distillation solvent, and about 20 ppm or more of an N,N-disubstituted amide.

56. The stream of claim 55 wherein said N,N-disubstituted amide is an N,N-dialkylamide.

57. The stream of claim 55 wherein said N,N-disubstituted amide has the following general formula:

wherein:

R^1 and R^2 preferably are selected from the group consisting of hydrogen, methyl, ethyl, propyl, iso-propyl and butyl groups; and,

R^3 is selected from the group consisting of alkyl groups, alkenyl groups, and combinations thereof having from about 16 to about 22 carbon atoms.

58. The stream of claim 55 wherein said N,N-disubstituted amide is an N,N- dimethylamide of a fatty acid.

59. The stream of claim 55 wherein said fatty acid is a tall oil fatty acid.

60. The stream of claim 56 wherein said fatty acid is a tall oil fatty acid.

61. The stream of claim 57 wherein said fatty acid is a tall oil fatty acid.

62. A stream comprising at least one fouling agent, at least one extractive distillation solvent, and about 20 ppm or more of an N,N-dimethyl amide of a tall oil fatty acid.

63. The stream of claim 59 wherein said extractive distillation solvent comprises acetonitrile.

64. The stream of claim 60 wherein said extractive distillation solvent comprises acetonitrile.

65. The stream of claim 61 wherein said extractive distillation solvent comprises acetonitrile.

66. The stream of claim 62 wherein said extractive distillation solvent comprises acetonitrile.

67. A method for preventing fouling of equipment during solvent recovery in a diene plant comprising treating a solvent recovery blend comprising said one or more fouling agents with an N,N-disubstituted amide in an amount and under conditions effective to form a dispersion of said one or more fouling agents in said blend and to prevent said one or more fouling agents from depositing on said

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equipment under conditions of operation of said equipment, wherein said N,N-disubstituted amide has the following general formula:

R^1 and R^2 independently are selected from the group consisting of hydrogen atoms; hydroxyalkyl groups having from about 1 to about 3 carbon atoms; branched or unbranched alkyl groups and alkenyl groups having from about 1 to about 30 carbon atoms; and,

R^3 is selected from the group consisting of hydrogen, aryl groups, aralkyl groups, alkaryl groups, and branched or unbranched alkyl groups and alkenyl groups having from about 1 to 30 carbon atoms.

68. The method of claim 67:

provided that,

when R^1 is selected from the group consisting of a hydrogen atom and alkenyl group, R^2 is

$$C_nH_{2n-z}$$

wherein, when n is an even number, R^1 or R^2 comprises a quantity of carbon-carbon double bonds and said quantity increases from 1 to 2 to 3, to 4 to a maximum of n/2, with z following a first progression 1, 3, 5, 7,.... to n - 1, depending of the number of alkene groups present; and

when n is an odd number and said quantity increases from 1 to 2 to 3, to 4 to a maximum of (n-1)/2, with z following a second progression, 1, 3, 5, 7,.... to n-2.

69. The method of claim 67 wherein R^3 is selected from the group consisting of branched and unbranched alkyl and alkenyl groups having from about 16 to 22 carbon atoms.

70. The method of claim 68 wherein R^3 is selected from the group consisting of branched and unbranched alkyl and alkenyl groups having from about 16 to 22 carbon atoms.

71. The method of claim 67 wherein R^1 and R^2 independently are selected from the group consisting of hydrogen atoms; hydroxyalkyl groups having from about 1 to about 3 carbon atoms; branched or unbranched alkyl groups and alkenyl groups having from about 1 to about 6 carbon atoms.

72. The method of claim 67 wherein R^1 and R^2 independently are selected from the group consisting of alkyl groups having from about 1 to about 4 carbon atoms.

73. The method of claim 68 wherein R^1 and R^2 independently are selected from the group consisting of hydrogen atoms; hydroxyalkyl groups having from about 1 to about 3 carbon atoms; branched or unbranched alkyl groups and alkenyl groups having from about 1 to about 6 carbon atoms.

74. The method of claim 68 wherein R^1 and R^2 independently are selected from the group consisting of alkyl groups having from about 1 to about 4 carbon atoms.

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75. The method of claim 69 wherein R^1 and R^2 independently are selected from the group consisting of hydrogen atoms; hydroxyalkyl groups having from about 1 to about 3 carbon atoms; branched or unbranched alkyl groups and alkenyl groups having from about 1 to about 6 carbon atoms.

76. The method of claim 69 wherein R^1 and R^2 independently are selected from the group consisting of alkyl groups having from about 1 to about 4 carbon atoms.

77. The method of claim 70 wherein R^1 and R^2 independently are selected from the group consisting of hydrogen atoms; hydroxyalkyl groups having from about 1 to about 3 carbon atoms; branched or unbranched alkyl groups and alkenyl groups having from about 1 to about 6 carbon atoms.

78. The method of claim 70 wherein R^1 and R^2 independently are selected from the group consisting of alkyl groups having from about 1 to about 4 carbon atoms.